Predicting the Future of Census Towns

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The 2011 Census highlighted the enormous growth of census towns, which contributed more than one-third of the urban growth during 2001–11. Since the rural–urban identification process in India is *ex ante*, using past census data, the number of CTs that will be identified in 2019 for the 2021 Census are estimated. The present study finds that the importance of CTs will be maintained in the urban structure, and a significant share of urban population will continue to grow beyond municipal limits. The influence of large towns on the growth of CTs will be persistent in the future, but a more localised form of urbanisation is also evident where the effect of agglomeration is less. Such a pattern may be stable because these places are relatively more prosperous than their rural counterparts.

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The surge in the number of census towns (CTs) in the 2011 Census has drawn a lot of attention to the dynamics of this *in situ* pattern of urbanisation in India. The number of CTs grew from 1,362 in 2001 to 3,892 in 2011, along with a higher growth of urban population than the previous decades.[1] The contribution of the new CTs to overall urban growth rose from a mere 6% in 1991–2001 to 35% in 2001–11. It was also the second largest component of urban growth after the natural increase in population.[2] Other than their contribution to urban growth, the share of CTs to urban population rose to 14.4% in 2011 from 7.4% in 2001. The new CTs also contributed significantly to the spatial structure of large urban agglomerations (UAs), as 70% of the peripheral growth in the million-plus UAs was attributed to them. Hence, the broader picture of urbanisation in the recent decade was much influenced by the dynamics of CTs, and there was a greater emphasis on understanding and acknowledging the diversity of urban systems in the country (Denis et al 2012; Pradhan 2013, 2017; Samanta 2014). However, a lot of the recent work on CTs—which constitutes quantitative as well as field-based evidence—does not expect this structure to persist in the long run, owing to the instability of male non-farm workforce in these areas (Guin and Das 2015; Chakraborty et al 2017).

The present study is placed in the context of this broader debate on the future of CTs in India. As the rural–urban classification process in the census is *ex ante* and the urban frame for the upcoming census is likely to be prepared during 2019–20, this is a suitable time to identify the villages of the 2011 Census that can be classified as CTs in the upcoming Census of 2021. This exercise is important to check whether the large increase in the number of CTs from the 2001 to the 2011 Census is restricted only to that time period, or whether it is part of a temporally consistent process of rural–urban transformation. There are three main focus areas of this study. First, it discusses the difficulties and methodological inconsistencies associated with defining and classifying urban in India. It highlights how each of these issues affect the estimation of urban population. The second part discusses the prediction methodology of the upcoming CTs and attempts to see how the urban structure will be in the upcoming census. It also discusses briefly the regional distribution of the upcoming CTs. The third section studies the spatial nature of urbanisation, based on the spatial characteristics of existing and upcoming CTs in relation to large urban areas.

The Rural–Urban Definition

The Census of India has a clear definition of rural and urban, which has evolved over time. While the first post-independence Census of 1951 briefly stated that "places with a smaller

population (than 5,000) with definite urban character may be treated as separate towns," the size-only criterion was not long-lived. The existing urban definition which is unchanged since the Census of 1961 distinguishes three kinds of urban areas: statutory towns (STs), CTs, and outgrowths (OGs). STs are administratively declared urban areas by the states and, very rarely, by a central law. This includes various types of urban local bodies (ULBs) like municipal corporation, municipality, cantonment board, notified town area committee, town panchayat, nagar palika, etc. On the other hand, all rural areas with a population of more than 5,000, a population density of at least 400 people per square kilometre, and male main non-farm workforce of 75% and more are classified as CTs by the Office of the Registrar General of India (ORGI). OGs are villages or parts of villages or hamlets which are contiguous to STs and bear some physical urban characteristics like urban-like amenities. Hence, while STs are administratively urban, CTs and OGs are only functionally or physically counted as urban, but governed as rural.

As noted above, the rural–urban classification process by the census is ex ante and all settlements are classified as either rural or urban prior to the census operations.[3] The ORGI uses data from the last census for making such classification. For example, data from the 2001 Census was used as the reference for the rural–urban delineation of the 2011 Census. In this process, the first step is to take note of the jurisdictional changes to the villages and the STs that occurred in between the two censuses. Since the state governments may form new STs during the inter-censal period, and geographical area of the existing STs may also undergo changes, it is important to adjust these changes. Moreover, new villages may also come up during this period. Once the final lists of STs and villages are finalised, the second step is to identify the CTs by applying the three pre-defined criteria to all villages. It is noteworthy that while the ORGI does not apply any changes for the density and workforce criteria, a reduced population cut-off of 4,000 is considered instead of the actual 5,000. This is because ORGI implicitly assumes that a village with a 4,000 population in the previous census will reach 5,000 in the following census. In addition to calculating the new CTs, all the existing CTs which fail to satisfy the three criteria (that is, declassified CTs) have also been identified. Once the list of the final CTs are prepared after adjusting changes for the declassified CTs, the OGs are identified from the remaining villages using the physical criteria. The rest of the villages are considered as rural to prepare the final frame for house listing and population enumeration.

The ORGI does not specify the reason for this pre-delineation of the rural–urban frame before the actual census operations, which has existed since the 1961 Census. However, there are some inherent rationale involved in the process. A pre-classification of the rural and urban areas may accelerate the data dissemination process. There is also location-specific information which is collected separately for rural and urban areas, and an ex-ante classification may be useful for the same. For example, information on land use, irrigation or crop production

are collected only from rural areas and information on urban facilities, like movie theatres or working women's hostels, are collected specifically for urban areas.

There are certain issues and methodological inconsistencies associated with the rural–urban identification, which are important in the context of estimating and counting the number of future CTs. Therefore, it is imperative to look through these inconsistencies before predicting the upcoming CTs. There are three such issues. While the first issue is related to the definition of non-farm workforce, the other two are more related to the ex-ante classification adopted by the census.

Unclear non-farm definition: While the concept of "non-farm" is usually applied to any kind of economic activity other than agricultural pursuits, it has been defined differently in various parts of census statistics. As per the instructions for the Census 2011, for calculating the non-farm workforce for defining CTs, "only male main workers will be considered and the workers engaged in the agricultural activities, namely (a) Cultivators, (b) Agricultural Labourers, and (c) Plantation, Livestock, Forestry, Fishing, Hunting and allied activities will be excluded for computing the percentage of workers engaged in non-agricultural pursuits" (Census of India 2011).[4] This implies that while counting the CTs, the plantation, livestock, forestry, fishing hunting and allied workers (PLFFH) are treated as farm workers. On the other hand, the settlement-level data on workforce in the Primary Census Abstract (PCA) does not provide estimates for PLFFH workers and combines it with the larger category of "other workers," all other components of which are non-farm in nature.[5] This dubious nature of representing and using the workforce data not only creates a barrier in the neat identification of the upcoming CTs, but also creates confusion with regard to measuring the pace of economic transformation in these places where the share of the PLFFH workers is high.

Unadjusted density criterion: As mentioned above, a reduced population cut-off of 4,000 is applied on the previous census data to identify the CTs, while no adjustment is made to the population density and non-farm workforce. While the assumption that a population of 4,000 will become 5,000 in 10 years is itself problematic due to varied pace of fertility and population growth rate in different parts of the country (Tumbe 2016), an adjustment to population density is necessary for the consistency of estimation.

In order to explain the problem, consider a hypothetical village with a population of exactly 4,000, and a geographical area of 10 square kilometres (sq km) in the census of 2001. According to the present methodology, if the non-farm workforce of this village is at least 75%, it will be chosen to be classified as a CT in 2011. With the geographical area remaining unchanged, if the population of this village becomes 5,000 in 2011, it implies that the population density becomes 500 persons/sq km in 2011, which is higher than the prescribed limit of 400 persons/sq km. It implies that if the population limit is reduced to 4,000, then the density cut-off has to be reduced to

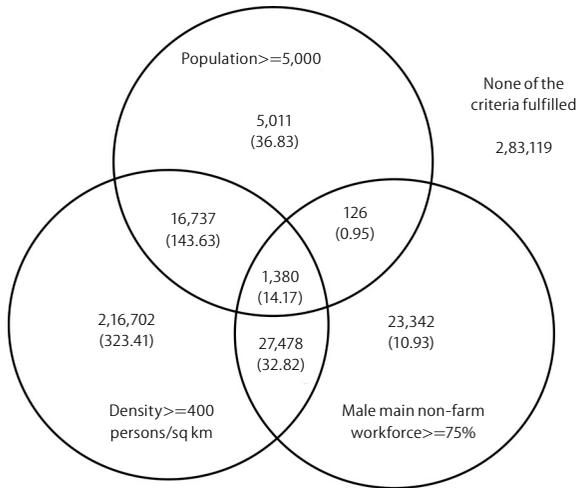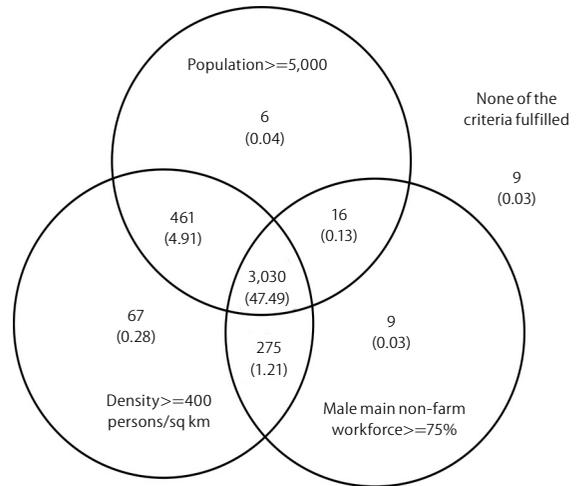**Figure 1a: Decomposition of Ignored CTs of 2011**

Figure 1b: Decomposition of Included CTs of 2011

Figures inside parentheses are the population of settlements, described as millions.
19 CTs were excluded from the calculation displayed in Figure 1b as the information of area was not available.
Source: Authors' computation from Census of India, 2001 and 2011.

320 persons/sq km so that both criteria would match with the prescribed thresholds in the actual data. Since the area of the villages are less prone to changes over the years, a readjusted and reduced cut-off of density would be consistent with the population growth of the villages identified to be CTs, and such a reduced cut-off can increase the number of upcoming CTs.

Like population and density, an adjustment to the economic criteria, that is, the male main non-farm workforce can also be a possible rectification to the identification methodology of CTs. However, the dynamics of male non-farm workforce in large parts of rural India is unstable, as people keep oscillating between farm and non-farm work (Sidhwani 2015). While there is a 2.8% increase in the all-India male main non-farm workforce in 2001–11, the variation across CTs is very large. It can be found that out of the 3,891 CTs in 2011, 42% have registered a drop in their male main non-farm participation during this time period and the remaining 58% registered no change or an increase in male main non-farm workforce. Such variation makes it difficult to predict the path of male non-farm workforce over the inter-censal period at the settlement level and to readjust for the same.

Ignored and included CTs: As CTs are identified using previous census data, this may underestimate (ignore) or erroneously overestimate (include) the actual number of CTs during the projection process. Since the geographical areas of villages usually remain constant, both of these errors are due to the differences in the expected and actual growth rate of the population and non-farm workforce. Two kinds of settlements may emerge as a result of such classification: (i) "Ignored" CTs are villages that were not classified as CTs, that is, they could not clear the threshold in the previous census data, but manage to do so in the current data. This happens mainly due to the growth of population or non-farm workforce at a more-than-expected rate during the inter-censal period; (ii) "Included"

CTs refer to villages that were classified as CTs but could not fulfil some or all of the criteria as per the current census data.

As the settlement level data on population, area, and workforce is available for both the 2001 and 2011 Censuses, it is possible to estimate the number of villages and CTs that fall in the "ignored" and "included" category over the last two decades. However, the unavailability of the PLFFH workforce data at the village level poses some difficulties for correctly adjusting the male main non-farm workforce. The methodology used in this paper to adjust the PLFFH workforce has been discussed in the next section.

Analysis of the 2001 data shows that there were 1,545 villages with a population of 16.8 million that fulfilled the criteria to become a CT, but were not classified as CTs as information from the 1991 Census was used. This number was 1,380 in 2011 with a population of 14.2 million (Table 1, p 73). If the density criteria could be readjusted to 320 persons/sq km, this number may rise up to 1,444 villages, with a total population of 14.7 million. On the other hand, 843 out of the 3,892 existing CTs in 2011 (21.7%) failed to clear the threshold barrier in the actual data. It can also be seen that the workforce criteria is the one which is the toughest to sustain for the existing CTs of 2011, as 461 (54%) of the CTs are unable to fulfil it. It is interesting to note that a mere 16 CTs in 2011 failed to meet only the density criteria and 126 villages that met the population and workforce criteria did not meet the density criteria, as compared to 1,380 ignored CTs which met all three criteria (Figures 1a and 1b). This factor, along with the fact that more than two lakh villages could not satisfy the density criteria to be a CT in 2011, draws attention to the variation of density as a criterion to identify urban settlements in India.

The exclusion and inclusion of settlements across the rural–urban frame is also a by-product of the stringency of the urban definition. For example, 11% of the ignored CTs had a population of 3,500–4,000 in 2001, and they could have added a population of about 0.9 million to urban areas if the threshold limit

were lowered to 3,500, instead of 4,000. Similarly, 14% of these settlements had a male main non-farm share between 70% and 74%, and were marginally excluded to be part of the urban frame of 2011. Similarly, out of the 843 included CTs, 23% reported a male main non-farm share between 75% and 80% in 2001, and eventually their share fell below 75% in the 2011 Census.[6]

Table 1: Statewise Distribution of Ignored and Included CTs, 2011

State	Ignored CTs		Included CTs	
	No	Population (million)	No	Population (million)
Tamil Nadu	198	1.67	77	0.59
Kerala	191	3.85	58	1.11
West Bengal	133	1.17	189	1.36
Uttar Pradesh	128	1.06	73	0.49
Maharashtra	117	1.26	46	0.37
Karnataka	74	0.60	39	0.31
Bihar	61	0.47	21	0.12
Rajasthan	60	0.59	23	0.16
Jharkhand	56	0.39	40	0.24
Andhra Pradesh	50	0.57	35	0.36
Gujarat	48	0.45	38	0.29
Jammu and Kashmir	47	0.33	17	0.09
Assam	29	0.19	45	0.28
Punjab	29	0.23	20	0.10
Haryana	27	0.19	16	0.11
Madhya Pradesh	21	0.15	21	0.14
Odisha	18	0.11	48	0.28
Others	93	0.89	37	0.21
India	1,380	14.17	843	6.61

Ignored CTs refers to villages which satisfied all three criteria to be a CT, but not classified as a CT, Included CTs refers to villages which are classified as CTs in 2011 but failed to satisfy the three criteria later.

Source: Authors' computation from Census of India, 2001 and 2011.

Table 1 represents the state-specific variation of CTs which belong to the "included" and "ignored" categories in 2011. It can be observed that the CTs in states like West Bengal, Tamil Nadu, Uttar Pradesh, and Kerala had a very dynamic pattern of transformation, where a large number of CTs came up during 2001 and 2011 and at the same time a lot of them may get declassified in the forthcoming census. West Bengal, which has 780 existing CTs in 2011, may lose about one-fourth of them (24.2%) during the next census. However, the net impact of such change may not be high as the number of ignored CTs are also high in most of these states, and may fill up the spaces resulting from declassification.

Prediction Methodology of the Upcoming CTs of 2021

Using the same methodology as the census, this paper tries to identify all the rural areas in 2011 which will be eligible for classification as a CT in the upcoming Census of 2021. However, there are three challenges which may affect the accuracy of such estimation. The first one, as already pointed out, is related to absence of village-level data on PLFFH workers. The second problem is related to the assimilation of villages with the existing or new urban areas in the meantime, which may result in overestimation of the actual number of CTs. This is especially the case for the villages that are close to statutory towns. Though it is difficult to identify such villages ex ante as

creation or expansion of the STs is primarily a state subject, the present paper attempts to draw an estimate based on the spatial characteristics of the upcoming CTs. The third issue which could affect the number of upcoming CTs is if some of the existing STs would get de-notified and reclassified as CTs. Similarly, some of the OGs can be identified as standalone CTs if they satisfy the threshold criteria. Since such incidence is not very common,[7] it is unlikely that it is going to affect the aggregate numbers substantially.

Adjustment for PLFFH workforce: In the absence of village-level disaggregated workforce data for the 2011 Census, information from both the 2011 and 1991 Censuses have been used to estimate the village-level PLFFH share. This paper has used a unique database for this, which combines socio-economic and geospatial information of more than 6,00,000 villages over three census periods (1991–2011).

There is large inter-district variations in the PLFFH workers in India which range from 0%–71% of the total main male workforce in 2011.[8] The recently released[9] district-level workforce data from the 2011 Census have been used to take into account the inter-district variation in the PLFFH share. However, there are large variations within districts as well in terms of the PLFFH share. For villages with at least 3,500 population in 1991, the difference between a village and its corresponding district PLFFH share (rural) can be as high as 75 percentage points.[10] Therefore, it was essential to correct the variation of PLFFH workforce not only across districts but also within districts. Since the 2011 Census does not provide the PLFFH workforce information at the village level, the 1991 primary census abstract (PCA) data have been used to account for inter-village variation. All villages in a district have grouped into quintiles[11] based on the share of PLFFH workers and then the mean share for each of the cohorts have been calculated. The ratio of the mean share of each village cohort to the district share is multiplied with the 2011 district share to obtain the PLFFH share for each village in 2011. The estimated village share for 2011 can be represented as follows:

$$A_{ijk}^{2011} = A_k^{2011} * \left(A_{jk}^{1991} \Big/ A_k^{1991} \right)$$

where
$j = 1, 2...5$ and k is the number of districts and

i is a village in a cohort (quintile) j of district k where j is based on the actual PLFFH share in 1991; superscripts refer to the respective census.

A= Share of male main PLFFH to total male main worker.

This estimated village PLFFH workforce share in 2011 $\left(A_{ijk}^{2011} \right)$ is then deducted from the 2011 village male non-farm workforce (that is, workers in "household" and other sector) to get the final estimates for the rural male main non-farm workers in 2011. Adjusting at this line significantly calibrates the distribution of non-farm workforce at the village level, in comparison to the non-adjusted estimates or estimates adjusted simply using the district share, which either overestimates or

Figure 2: Distribution of Rural Male Main Non-farm Workforce for Large-dense Villages of Kerala,* 2011
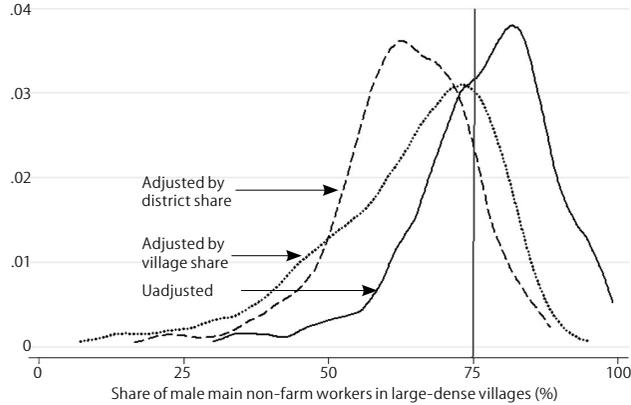
* Large-dense villages refer to villages with a population of more than 4,000 and density of more than 400 persons/sq km.
Source: Census of India, 1991, 2001 and 2011.

Figure 3: Contribution of CTs to the Urban Structure (%)

Though the upcoming CTs of 2021 are currently not part of the urban frame, their share to the projected urban population of 2021 has been shown in Figure 3, in order to facilitate comparison over time. The first bar is with reference to the urban population of 2011 while the second bar uses the projected urban population of 2021. The current share of CTs to total urban population of 2011 is the share of existing CTs in 2011, that is, 14.4%.
Source: Authors' computation from Census of India, 2001 and 2011.

underestimates it, as seen in the case of Kerala (Figure 2). However, this methodology is based on the assumption that the village share of PLFFH workers remain constant from 1991 to 2011 and the multiplier derived as a ratio of the village PLFFH cohort vis-à-vis district PLFFH share also remains constant from 1991–2011. These approximations can be regarded as limitations of the present analysis, but it is much more refined than the unadjusted one.

Adjustment for boundary expansion: As mentioned above, it is difficult to gauge the impact of urban expansion or reclassification of other kinds of settlements on the total number of upcoming CTs. Around 11% of the total CTs in 2001 had undergone such processes (Pradhan 2013). One of the ways to approach this problem is to eliminate the CTs which fall in the vicinity of large cities. This paper uses the numbers derived through the same measure in the next section.
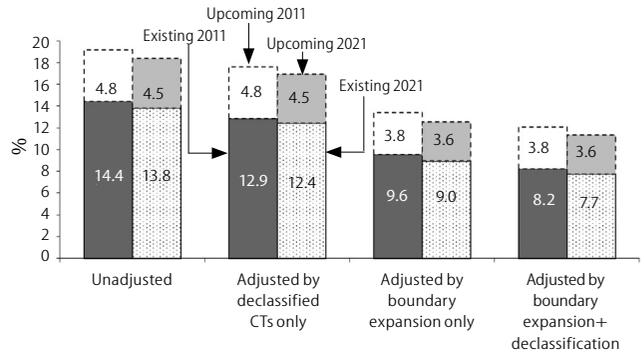
Contribution of the Upcoming CTs to the Urban Structure

Using the methodology discussed above, 2,231 settlements are found to be fulfilling all three criteria to become a CT during the upcoming census, which currently accommodates a population of 17.9 million. Together with the 3,892 existing CTs, these upcoming CTs will take up the number of CTs to 6,123. These CTs currently have a population of 72.2 million, which account for 19.1% of the urban population in 2011. If it is assumed that these CTs grow at the same rate at which all the existing CTs grew within 2001–11, they will account for 18.4% of the 497 million projected urban population in 2021.[12]

As mentioned above, the net change in the number of CTs over the inter-censal years depends upon three issues: declassification of existing CTs to villages, merging of existing and upcoming CTs to the larger STs due to boundary expansion or creation of new STs, and declassification of old STs or conversion of OGs into CTs. As mentioned above, the third factor is not significant and entirely a matter of state discretion. The merging and conversion of CTs to STs is also a state matter, but it substantially affects the population living in urban areas

but outside municipal limits. On the other hand, declassification of CTs to villages is based on census criteria.

Other than the unadjusted estimate presented above, this paper also attempts to provide an adjusted estimate of the CTs share in the urban structure of 2021, based on two main factors: declassification and boundary expansion. It can be seen from Figure 1b that out of the 843 included CTs which do not satisfy the criteria to be a CT presently, 275 CTs only satisfy the density and workforce criteria, but not the population threshold of 5,000. However, not all of these 275 CTs are going to be declassified, as 228 of them will be identified again as CTs in the 2021 Census, having a population of less than 5,000 but more than 4,000. Hence, the number of declassified CTs will be 615 instead of 843.

In order to adjust for the boundary expansion, the locational characteristics of the existing and upcoming CTs have been used, which give a more realistic, albeit stricter estimate to capture the effect of boundary expansion on the net change of CTs. Using a spatial database that maps more than 6,00,000 villages and about 8,000 urban areas of the country, it can be found that 941 existing and non-declassifiable CTs, and 432 upcoming CTs share their boundary with large STs having a population of one lakh or above.[13] Out of these 1,373 CTs which are adjacent to the boundaries of large STs, 72 also fall in the list of the declassifiable CTs. So the net number of declassified CTs would reduce from 615 to 543 if both expansion and declassification are considered, while the remaining 72 will be eliminated beforehand due to expansion.

This paper presents four different scenarios to show the contribution of CTs in the urban structure of 2021 (Figure 3). The first one is the most lenient estimate of the 6,123 CTs, unadjusted by any changes over time. The second assumes that there will be no change due to expansion, but all the 615 CTs that do not fulfil the urban criteria are going to be declassified. The total number of CTs in this scenario—which currently contribute to 17.6% of the urban population—will drop to 5,508, and will continue to accommodate 16.9% of the urban population in 2021. The third picture will refer to no declassification, but changes due to expansion. The total

Figure 4a: Emerging CT Hotspots
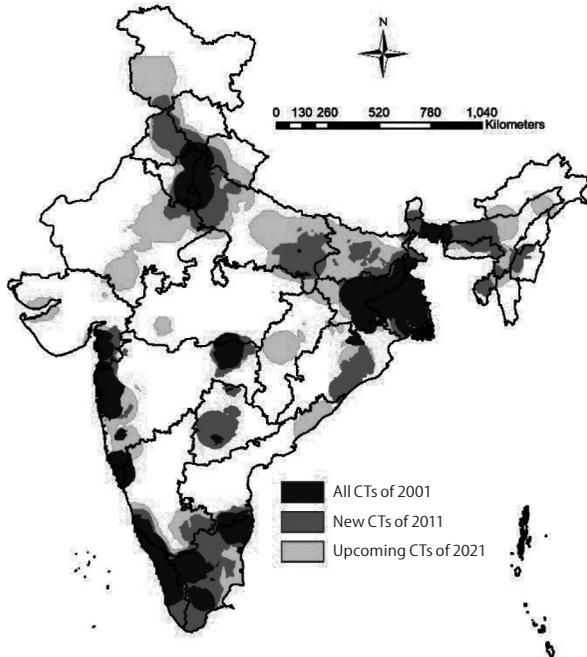
Source: Census of India, 2001 and 2011 (Darker villages are dense villages).

Figure 4b: Spatial Distribution of Dense Villages   (400 persons/sq km)

number of CTs in such case will be 4,769, and together they currently contribute 13.4% of the urban population, and their future share to the urban structure will be 12.6%. The fourth measure will be the strictest estimate of the lot, which applies both the expansion and the subsequent declassification restrictions, and brings down the total number of CTs to 4,207. The current share of CTs to the urban population as per this most conservative estimate is 12.1%, and it will be 11.3% in 2021.

All of these measures indicate that the importance of CTs to the urban structure will continue to be there in the upcoming census, even if we apply strict estimates of boundary expansion. Though the share of CTs to urban population is expected to decrease in comparison to the 2011 Census, it will still be higher than the 2001 Census.

Regional distribution of the upcoming CTs: The statewise distribution of the 2,231 predicted CTs is given in Table 2, along with the distribution of the existing CTs and new CTs between 2001 and 2011. Two important patterns emerge from this distribution. First, the upcoming CTs are concentrated in a few states. Second, the upcoming CTs are expected to come up in states which already have a significant proportion of existing CTs. Figure 4a shows the regional distribution of the CTs over three different time periods, that is, all the CTs in 2001, the new CTs that came up within 2001 and 2011, and the upcoming CTs in 2021. As it is evident, the geographical spread of the older CTs is only expanding, as opposed to the creation of newer hotspots.

The regional concentration of the CTs should be looked at from the angle of how "urban" is defined in India. While the criteria for defining the STs vary from state to state, the identification of CTs is based on discrete demographic and economic thresholds throughout the country. In a physically
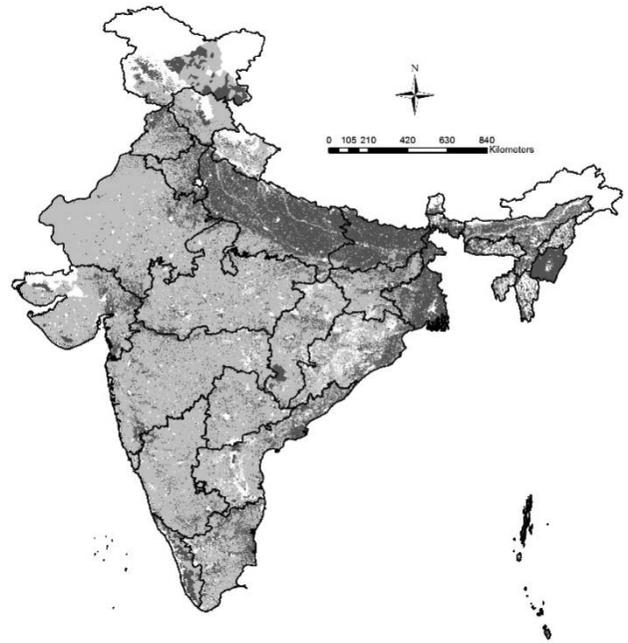
and socio-demographically diverse country like India, this uniform definition cannot address the spatial variation in the process of rural to urban transformation. There are differences in the average size and density of villages across the country (Figure 4b). For example, about 60% of the villages in India with population of 4,000 and more, and population density of more than 400 persons/sq km are concentrated mainly in four states (UP, Bihar, West Bengal and Jharkhand).

Table 2: Distribution of Existing and Upcoming CTs and Their Population as per Census 2011

States	Total CTs in 2011		Upcoming CTs in 2021	
	No	Population (million)	No	Population (million)
West Bengal	780	7.94	285	1.84
Tamil Nadu	376	5.00	275	2.01
Uttar Pradesh	267	3.56	251	1.60
Kerala	461	10.30	200	3.89
Maharashtra	278	4.02	159	1.45
Jharkhand	188	2.58	118	0.66
Karnataka	127	1.23	107	0.74
Bihar	60	0.49	100	0.64
Rajasthan	112	1.24	93	0.73
Jammu and Kashmir	36	0.27	92	0.53
Assam	126	0.97	85	0.44
Andhra Pradesh	228	4.12	67	0.65
Gujarat	153	1.77	62	0.51
Uttarakhand	41	0.49	54	0.44
Punjab	74	0.69	48	0.31
Odisha	116	0.83	46	0.24
Haryana	74	0.91	45	0.27
Madhya Pradesh	112	1.11	40	0.24
Chhattisgarh	14	0.14	25	0.13
NCT Delhi	110	4.97	18	0.21
Others	159	1.67	61	0.41
India	3,892	54.28	2,231	17.93

Source: Authors' computation from Census of India, 2011.

CTs as dynamic entities: The regional distribution of CTs over time elucidates that there are two kinds of spaces where the process of rural to urban transformation is visible. The first one includes states with larger number of ignored CTs, which will eventually show up as upcoming CTs of 2021. Out of the 2,600 new CTs that came up between 2001 and 2011, 53% are ignored CTs from the 2001 Census and this share rises up to 62% for the upcoming CTs. These CTs are located in states that also have numerous "included" CTs which are going to face a reversal from urban to rural status in 2021. Out of the 843 included CTs, 723 (86%) fall in a district that also contains at least an upcoming CT (Table 1). These are the areas where the process of rural to urban transformation is dynamic, and the rural workforce usually moves back and forth within farm and non-farm activities. These are concentrated in West Bengal, Kerala, Tamil Nadu, Bihar and some parts of UP.

The second group includes places where not only the rural non-farm activity is already high, but also growing more than the national average. These are the areas where some new set of villages can come up as CTs, which are not actually "ignored CTs" from the previous census. These two patterns are spatially associated over the last decade in areas like parts of Tamil Nadu, the National Capital Region (NCR)—Mumbai corridor, and Jharkhand. There are some parts of the country where none of these two patterns are visible, which include most of the hilly states, Madhya Pradesh, Chhattisgarh, inland Odisha, Andhra Pradesh, Telangana, and the Vidarbha region of Maharashtra. Most of these areas are characterised by a higher growth of farm workforce than the non-farm in rural areas, and the incidence of larger or denser villages is less, so as to make the remaining villages with high male non-farm workforce eligible to become CTs.

Spatial Characteristics of Upcoming CTs

The location of the CTs in relation to the existing large urban areas becomes important, taking into view the sustainability of non-farm employment and the future growth of CTs. Proximity to urban areas takes into consideration a number of other factors which are vital for a settlement to sustain as a CT in the long run. Some of these factors include its economic footprints in the form of large manufacturing complexes or industrial areas, improved transport and communication network, or a commuter-based pattern of growth (Sharma and Chandrasekhar 2014). Apart from these, there is a different class of CTs which are purely non-proximate to large towns and grow by a "vibrant people-driven, market-centred process" of their own (Mukhopadhyay 2013).

Pradhan (2013, 2017) in his study has shown that about 37.2% of the new CTs in 2011 fall in the proximity of the class I towns. Using his methodology that involves buffers of varying distances around different size-class of towns, it is estimated that 42.3% of the total CTs (both existing and upcoming) are in the proximity of the class I towns and they account for 47.4% of their total population. The shares of such proximate CTs are 38.5% for the existing CTs in 2011 and 41.6% for the upcoming CTs in 2021. If class II towns are incorporated in this analysis, the share of

all proximate CTs (both existing in 2011 and upcoming in 2021) rises up to 50.9%, which covers 56.5% of their population of 2011. When decomposed, the share of CTs is 51.7% (59.7% of population) for existing CTs in 2011, and 49.5% of the number (46.9% of population in 2011) of upcoming CTs in 2021. A first look at these results highlights the importance of proximity, both in terms of number and population. Also, the importance of proximity is expected not to change in the upcoming census.

Table 3: Proximity of Existing and Upcoming CTs by Size-class of Towns

Town Size-class	All CTs in 2011			Upcoming CTs in 2021		
	Case I	Case II	Case III	Case I	Case II	Case III
> 4 million	17.2%	19.6%	12.7%	13.9%	17.8%	8.4%
	(21.9%)	(24.1%)	(16.7%)	(12.9%)	(17.1%)	(7.9%)
1–4 million	16.1%	15.4%	17.1%	22.2%	20.1%	23.1%
	(19.4%)	(17.3%)	(22.1%)	(23.1%)	(19.6%)	(24.3%)
0.5–1 million	12.1%	12.9%	11.7%	12.9%	12.7%	14.0%
	(11.6%)	(12.2%)	(13.2%)	(12.9%)	(13.3%)	(13.4%)
0.1–0.5 million	37.3%	34.7%	41.1%	34.8%	33.0%	38.6%
	(31.8%)	(30.4%)	(32.5%)	(31.6%)	(29.5%)	(34.2%)
50,000–0.1 million	17.3%	17.4%	17.4%	16.1%	16.4%	15.9%
	(15.3%)	(16.0%)	(15.4%)	(19.5%)	(20.5%)	(20.2%)
Proximate CTs (Class I)	1,665	1,919	1,315	927	1,064	743
	(27.5)	(30.4)	(22.3)	(6.7)	(7.8)	(5.3)
Proximate CTs	2,013	2,324	1,592	1,105	1,272	883
(Class I+ Class II)	(32.4)	(36.2)	(26.4)	(8.4)	(9.8)	(6.7)
Total CTs		3891			2231	
		(54.3)			(17.9)	

Case I (Base graduated buffer): 50,000 to 1 lakh towns-5 km radius, 1 lakh to 5 lakh towns-10 km radius, 5 lakh to 10 lakh towns-15 km radius, 10 lakh to 40 lakh towns-20 km radius, More than 40 lakh towns-25 km radius; Case II (expanded graduated buffer): 50,000 to 1 lakh towns-6.25 km radius, 1 lakh to 5 lakh towns-12.5 km radius, 5 lakh to 10 lakh towns-18.75 km radius, 10 lakh to 40 lakh towns-25 km radius, more than 40 lakh towns-31.25 km radius; Case III (restricted graduated buffer): 50,000 to 1 lakh towns-3.75 km radius, 1 lakh to 5 lakh towns-7.5 km radius, 5 lakh to 10 lakh towns-11.25 km radius, 10 lakh to 40 lakh towns-15 km radius, More than 40 lakh towns-18.75 km radius. Numbers outside parentheses are share in number of CTs in each group to total proximate CTs; Numbers within parentheses are share in population of CTs in each group to total proximate CTs. The last three rows show population of CTs in parentheses and are represented in millions.
Source: Authors' computation from Census of India, 2011.

There are interstate variations in the share of proximate CTs to total CTs. States with a higher share of proximate CTs in 2011 are going to continue the trend in the upcoming decade (Table 4, p 77). However, for some states like Maharashtra, Punjab, Chhattisgarh and Gujarat, the share of the proximate CTs in the upcoming census is expected to increase significantly and it is going to drop for other states like Tamil Nadu or Kerala. It is important to mention that in the case of Kerala, which is going to contribute a substantial number of upcoming CTs, the share of proximate CTs turns out to be remarkably low, which is only 22.5% of all the upcoming CTs of 2021.

Discussion

This paper attempts to interpret the future discourse of CTs in India over time in the broader context of rural–urban transformation. Though the importance of CTs in the larger urbanisation scenario seems to be intact over the forthcoming years, there may not be as strong an impression of *in situ* urbanisation as in 2011, in the upcoming census. The regional distribution of the upcoming CTs portrays a spatially stagnant growth of CTs, which is restricted by a stricter demographic threshold. The non-farm criteria also seems to be insufficient to capture the

dynamics of rural–urban transformation across a large number of settlements that falls around the three-fourth interval, as coming down one point below 75% results to declassification of a settlement as a CT and vice versa. Hence, following the census definition, only villages which have met the prescribed thresholds could be classified as CTs, but there could be a larger number of villages with similar transformation and many of

Table 4: Statewise Distribution of Proximate CTs and Their Population as per Census 2011

State	All CTs in 2011	Upcoming CTs in 2021	All Proximate CTs
Jammu and Kashmir	52.8 (54.3)	18.5 (17.7)	36 (0.24)
Punjab	55.4 (59.6)	66.7 (65.1)	72 (0.60)
Chandigarh	100.0 (100.0)	100.0 (100.0)	9 (0.08)
Uttarakhand	65.9 (66.7)	53.7 (55.8)	56 (0.57)
Haryana	67.1 (72.9)	68.9 (67.4)	79 (0.83)
NCT Delhi	97.3 (99.6)	94.4 (97.5)	121 (5.02)
Rajasthan	20.5 (25.1)	31.2 (28.1)	50 (0.49)
Uttar Pradesh	71.5 (79.0)	72.9 (76.5)	370 (4.00)
Bihar	58.3 (64.4)	57.0 (57.3)	92 (0.69)
Nagaland	71.4 (85.7)	0.0 (0.0)	5 (0.06)
Manipur	73.9 (60.5)	87.5 (86.8)	24 (0.14)
Tripura	42.3 (51.0)	15.4 (13.4)	13 (0.16)
Assam	32.5 (32.3)	32.9 (33.7)	69 (0.46)
West Bengal	55.6 (59.4)	47.4 (40.4)	566 (5.42)
Jharkhand	38.3 (48.9)	44.9 (47.9)	120 (1.50)
Odisha	14.7 (17.0)	10.9 (10.0)	22 (0.16)
Chhattisgarh	50.0 (62.2)	68.0 (69.1)	23 (0.17)
Madhya Pradesh	44.6 (53.2)	52.5 (52.5)	70 (0.71)
Gujarat	62.1 (67.8)	64.5 (64.0)	131 (1.48)
Daman and Diu	50.0 (72.9)	100.0 (100.0)	5 (0.09)
Dadra and Nagar Haveli	60.0 (60.5)	50.0 (65.8)	5 (0.06)
Maharashtra	54.0 (63.1)	73.6 (81.0)	267 (3.71)
Andhra Pradesh	46.1 (47.4)	40.3 (38.6)	124 (2.08)
Karnataka	52.8 (58.0)	53.3 (49.0)	122 (1.05)
Goa	16.1 (22.8)	11.1 (10.4)	9 (0.10)
Kerala	37.7 (43.2)	22.5 (22.9)	174 (4.04)
Tamil Nadu	66.2 (76.7)	51.6 (53.3)	387 (4.84)
Puducherry	100.0 (100.0)	50.0 (52.1)	8 (0.11)
Andaman and Nicobar Islands	75.0 (92.3)	0.0 (0.0)	2 (0.02)
All India	51.7 (59.8)	49.5 (46.7)	3031 (38.88)

Only numbers derived from Case I (base graduated buffer) distances have shown.
Figures outside parentheses are percentage share of proximate CTs to all CTs in a state.
Figures inside parentheses are percentage share of proximate CT's population to total CT population of a state. The last column shows the number of all proximate CTs and their population (millions). "Proximate CTs" refer to all CTs proximate to Class II STs or above.
Source: Authors' computation from Census of India, 2011.

them could be at the margins. The 2,231 CTs which are estimated to come up during the next census, therefore only partially reflect the complex process of rural–urban transformation in India.

The debates about the sustainability of the CTs that came up within 2001–11 (Guin and Das 2015; Chakraborty et al 2017) focuses on the long-term survival of urban functions in these areas, as the growth of agricultural workers is higher in many of them in comparison to the non-farm workforce. The main reason cited behind such bleak outcomes varies from arguments like CTs are the by-products of agricultural distress to issues like failure of the non-farm sector to create regular wage employment or shrinking markets for the local functions. Though the logic of agricultural distress requires more empirical scrutiny involving long-term temporal data sets, the issue of variability in employment structure is evident in detailed analyses. For example, Sidhwani's (2014) analysis shows that in rural areas, not only is the movement from agricultural to non-agricultural activities an oscillating process, but also, the agrarian labour market itself is fluid, where shifting happens between the self-employed, landed cultivators and the casual agricultural wage labourers.

According to the National Sample Survey Office (NSSO) survey on migration, 41% of the total male short-term migrants move between farm and non-farm sector during the movement (NSSO 2007–08). Structurally, such fluidity tends to remain until sufficient regular wage employment is created in the rural non-farm sector, which very much depends on the type of jobs available in the same. Chatterjee et al (2015) estimated that most of the male employment in large villages are dominated by construction, manufacturing and trade related activities, which generates a lot of casual wage and self-employment, but the regular wage employment has not been created in large numbers. From the perspective of the CTs, such a trend is not sustainable if their stand-alone growth is concerned, as most CTs are not based on any "anchor industries" and depend on either non-formal everyday economies or some limited sources of new activities like public works under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) or private education, health or low-cost transport services (Mukhopadhyay et al 2016). Most of these activities do not provide enough economic stability for a permanent migration to non-farm livelihoods, independent of any marginal or short-term participation of farm work. The growth of CTs in the upcoming decade, therefore, may not be seen as a generic process of rural to urban transformation if an increased concentration of employment in the non-farm sector is not necessarily accompanied by a better standard of living, usually associated with an increase in wage.

Since the logic of the unstable rural labour market applies to all the CTs, including the upcoming ones, it is necessary

Table 5: Household Amenities and Assets by Villages, CTs and STs of Different Size-class

Settlement Type	Population Size	Good House %	Rented House %	Tap Water %	In-house Water %	In-house Latrine %	LPG as Fuel %	Bank Account %	TV %	Two-wheelers %
Village	< 4,000	44	2	29	31	26	9	55	30	14
	4,000−10,000	48	4	37	40	34	14	52	37	15
	> 10,000	50	7	32	51	50	19	54	43	15
Upcoming CTs (2021)	< 10,000	58	17	45	48	59	38	58	59	25
	> 10,000	64	14	40	67	81	38	65	70	25
Existing CTs (2011)	< 10,000	59	18	46	52	68	41	62	63	26
	>10,000	67	24	50	65	83	55	66	75	31
Statutory towns	< 10,000	61	19	65	49	56	45	61	66	25
	10,000−20,000	60	17	64	53	61	45	60	67	26
	20,000−50,000	63	20	64	63	70	52	62	67	29
	50,000−100,000	67	27	67	66	78	62	62	73	32
	> 100,000	71	31	78	78	86	73	71	81	39

Source: Authors' computation from Census of India, 2011 (tables on houses, household amenities and assets).

to get some evidence regarding the functional sustainability of these places. In the absence of reliable data sets on income, consumption or wage at the settlement level, various indicators related to household assets and amenities from the 2011 Census have been considered, which can be seen as proxy for the economic well-being of the settlements. The outcomes for the CTs have been compared to two other groups: villages of similar size-categories and statutory towns belonging to various population size-classes. The CTs are further divided into existing CTs of 2011 and upcoming CTs of 2021. Results show that both the existing and upcoming CTs are better in terms of access to public amenities and ownership of private assets than the villages of similar size-classes (Table 5, p 77). Though the existing CTs show a better coverage, it is important that the upcoming CTs are also better than their rural counterparts, a fact that refers to the better standard of living in these areas in comparison to the villages. However, for some indicators like access to in-house latrines and water within the household premises, the CTs show similar or even better coverage than the smaller STs. Such difference, especially in the case of public amenities can be explained by the possibility of higher federal funding in rural areas (Mukhopadhyay 2017), and lower provision in smaller urban areas.[14]

The spatial characteristics of CTs is another aspect which needs some more explanation. Like the existing CTs, almost half of the upcoming CTs are expected to come up in the proximity of towns with a population of more than 50,000. However, the spatial pattern of the CTs can be more layered in nature. There are other factors like connectivity,[15] place-based policy variables focused on industrial and infrastructural development in backward regions, return migration of skilled labourers from big cities (Iyer 2017), or remittance-based economies which may affect the mushrooming of these *in situ* urban areas. In most of these cases, such neighbourhood-level effects result in a variety of spillovers that often have interesting morphological outcomes like localised urban clusters or spatially contiguous development of CTs between two large cities. Hence, the simplistic classification of proximate and non-proximate CTs are not enough to explain the diversity of processes that underpin the spatial trajectory of such settlements. A more nuanced understanding of such processes and related built-forms have been attempted in Roy and Pradhan (2018), where the authors have used multiple spatial criteria to define the location of a CT, not only in relation to larger STs, but also according to their co-location with other CTs. Their analysis also shows that about 32% of the existing and upcoming CTs which are not emerging in the proximity of large towns are actually not isolated but "clustered CTs," or CTs that are located in contiguity to smaller STs or other CTs. Regional distribution of these CTs shows concentration in the tea belts of West Bengal and Assam, Kerala, and industrial and mining areas of Jharkhand and Odisha. Since such kind of growth cannot be restricted only to CTs, vis-à-vis other neighbouring villages bearing similar characteristics, the nature of such clusters can be an interesting avenue for further research.

Conclusions

The CTs, which are hotspots of economic transition in rural areas, show complicated trends over time. There are signals of prosperities and aspirations, as evident by their difference in terms of economic activity, improved public amenities and private assets compared to the rural areas, and more importantly, smaller statutory urban areas of similar size-classes. As mentioned above, in 2011, 53% of the new CTs were the ignored CTs of 2001. This number will rise to 62% for the upcoming CTs of 2021. So, proportionately fewer villages changed to CTs in 2011–21 than in 2001–11. This transition may not sustain if new settlements bearing such characteristics do not keep emerging, not as a residual of the counting process of the census but through more generic changes. The spatial characteristics of the CTs show that specific and place-based policy interventions like road, housing or educational infrastructures can be useful for economic development of CTs.

The current policy discourse dealing with the CTs lacks specific attention to these settlements, and they continue to be governed together with the villages that are different from them in terms of social and economic characteristics. While schemes like the Pradhan Mantri Awas Yojana (PMAY)–Rural or the Swachh Bharat Mission (SBM)–Gramin follow the traditional rural–urban binaries in terms of their area of operation; there are no different provisions across panchayats which include any of the existing or upcoming CTs, and panchayats which are more rural in general. There are considerable differences in infrastructural outcomes, for example, households in panchayats which have at least one CT show in-house latrine coverage of 74%, while it is only 30% for panchayats which only contain villages, that is, are completely rural.[16] The focus on the CTs from a governance perspective is therefore less, and there is sometimes an effort to keep these settlements under the rural governance framework for higher access to public resources through the various rural development programmes (Bhagat 2005). A recent advisory from the central government has asked the states to convert all the existing CTs to STs (PIB 2016),[17] in order to promote planned development in these spaces. While this renewed public interest in CTs is an optimistic step towards their future, there are two fundamental questions about this.

First, delineating the STs is primarily a state subject in India, and there are considerable variations across states (Joshi and Pradhan 2018). Also, converting the CTs to urban local bodies is a contested process on the ground which entails certain restrictions on land-use and application of taxes (Mukhopadhyay et al 2016).

Second, this "one-size-fits-all" approach may not be useful for all the CTs, considering the complex demographic, spatial and economic progressions these spaces are embedded in. Case-specific policies may be more useful in this regard, for example, considering the fact that 22.4% of the CTs are contiguous to the peripheries of Class I cities, it may be more appropriate to connect these areas to networked urban services like underground sewerage or piped supply of treated water, by simply merging them to the neighbouring

STs, rather than forming stand-alone STs. Similarly, in the case of multiple CTs clustered together, it may be a better option to merge them into a larger ST in order to reap the benefits of the agglomeration economies. The response of the state regarding the governance and management for planned urbanisation in these spaces will be therefore interesting in the forthcoming years, and will shape their future discourses over time.

NOTES

1 The absolute growth of rural population within 2001–11 was 91.3 million, while the same for urban was 90.9 million.

2 Within 2001–11, out of 90.9 million urban growth, 31.8 million was attributed to reclassification of settlements, 20.6 million was due to net rural–urban migration, and 38.5 million was due to the combined effect of natural increase of the population and change in the administrative jurisdiction of settlements.

3 The discrete frame of classifying settlements as rural and urban is not unique to India. While there is no standard international definition of "rural" or "urban," most countries use either one or a mix of administrative, demographic, economic, infrastructural or spatial criteria to differentiate between settlements. The most widely used criteria is the total population of a settlement and that benchmark varies from as low as 2,000 in Ecuador to as high as 20,000 in Turkey. Several countries, including Greece, Indonesia and Algeria, also classify intermediate spaces like "semi-rural" or "peri-urban" areas. The application of prospective measures to register the change from rural to urban is also not distinctive in case of India, as countries like Bhutan identify prospective urban areas in terms of their potential to grow as a revenue base (UNSD 2005).

4 Census Circular No 2, dated 23 July 2008, viewed from http://censusindia.gov.in/2011-Circulars/census_Circular1.html.

5 The workers belong to the "others" group "include all government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in trade, commerce, business, transport banking, mining, construction, political or social work, priests, entertainment artists, etc. In effect, all those workers other than cultivators or agricultural labourers or household industry workers, are 'Other Workers'" (GoI 2011).

6 There are two villages in Madhubani district of Bihar, namely Satghara and Pandaul which can be exemplified to explain the effect of a stringent urban definition. Satghara village became a CT in 2011. It had a population of 6,900 in 2001, and a male main non-farm workforce of 1,315, which constituted 86% of its total male main non-farm workforce. On the other hand, Pandaul had a population of 26,601 in 2001, but only had 2,246 male main non-farm workers. Pandaul could not qualify as a CT, despite being a significantly larger settlement and having a larger male main non-farm workforce than Satghara, as the share of those non-farm workers to its total male main non-farm workforce was only 46%.

7 There were only 141 CTs that came up between 2001 and 2011 as a result of reclassification of STs and OGs to CTs (Pradhan 2013).

8 The share of forestry and logging and fishing was 2.1% in 2010–11 as against 3.5% in 2000–01 (NAS, CSO). For Census 2001, the share of male main PLFFH workforce is 2.8%; nationally.

9 The B–04 table for Census 2011, which provides district-wise industrial classification of workforce, was only released in 2018.

10 Districts like Udalguri in Assam or Jalpaiguri in West Bengal have variation of PLFFH workers from none to 100% at village level, while the shares at the district levels are 11% and 19% respectively (as per the 1991 Census data).

11 Villages which have no PLFFH workers have been dropped. Also, only those districts which have at least 10 or more villages with PLFFH workers have been considered for adjustment.

12 This paper has used the urban population growth rate within 2001–11 (CAGR of 2.8%) to project the urban population of the country in 2021. However, using statewise urban growth rate to project the CT population may be an overestimation for the upcoming CTs of 2021, which are currently classified as rural. On the other hand, if we use the statewise total population growth rate (CAGR of 1.6%), it comes out to be an underestimation as it is much lower than the urban population growth rate. Most of the CTs are concentrated in states like West Bengal, Kerala or Tamil Nadu which have a low growth rate for total population but higher growth rate of urban population. The projection using the total growth rate, therefore, shows a lower share of the CTs in the urban structure of 2021 than 2011, which is vice versa if the urban growth rate has been used. The CAGR of all the CTs within 2001–11 was 2.3%, which is higher than the total but lower than the urban growth rate. Hence, this study uses the statewise growth rate of all the existing CTs in 2011 for projecting the population of existing and upcoming CTs.

13 This measure of boundary expansion has certain limitations: (i) it is not in all cases that an expansion of the ST encompasses the adjoining CT. For example, Erein, which is a small CT located only 6 km away from Bhadrak municipality in Odisha, was excluded to be absorbed in the master plan of Bhadrak city; (ii) the CTs which only form the immediate neighbourhood of Class I towns are considered for this analysis, but similar occurrence can happen in case of CTs neighbouring smaller STs; and (iii) this analysis does not adjust for interstate borders while considering the neighbourhood of the STs, which may restrict the expansion even if the CT shares its border with the larger ST.

14 There are currently no centrally funded schemes for development of urban infrastructure and governance specifically for smaller towns (towns below 1,00,000 population), though schemes like SBM–Urban or PMAY–Urban applies to these areas.

15 Roy and Pradhan (2018) have shown using the spatial data of national highways in India that 54% of the existing and upcoming CTs, which are not proximate to large towns, fall within a 5-km radius of national highways, which constitutes 56% of their population.

16 These figures are derived from an in-house data set created by the CPR, where the census household amenities and assets information for the CTs and villages have been aggregated to the level of panchayats.

17 In concordance with this advisory, the Maharashtra government had decided to convert 19 CTs near Pune to STs (Times of India 2016).

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